Site Structure and Slavery on Monticello Plantation in the Late-Eighteenth Century

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1 Introduction

A major innovation of the New Archaeology was the recognition that archaeological sites were not "spatially homogeneous artifact mines" but instead contained meaningful internal patterning (Binford 1964; Dunnell 1992). Since then, most site-structure researchers have focused on the implications of this insight for synchronic spatial patterning in different activities (e.g., O'Connell 1993; Wandsnider 1996; Hutson and Stanton 2007). But the synchronic emphasis fits poorly with a second decades-old insight –that the archaeological record is a palimpsest of temporally successive artifact accumulations (Ascher 1968; Bailey 2007; Binford 1981). Here, we show how studies of site structure can benefit from an explicitly diachronic approach.

Archaeological sites that were once the locations of enslaved African-American residences on 18th and 19th Chesapeake plantations are particularly challenging. Subsurface features and large stratified assemblages are often rare or non-existent. Thus site structure, especially spatial patterning in the distribution of artifacts in plowzone, is a critical source of information about these sites' occupational histories.

2 Site 7, Site 8, and Monticello Plantation

To illustrate the necessity of a diachronic approach to site structure, we draw on our work at Sites 7 and 8 located on Thomas Jefferson's Monticello Plantation.

Site 7 was initially occupied around 1750 by a small group of slaves and an overseer, who grew tobacco on Monticello Mountain, which was an outlying farm associated with Peter Jefferson's Shadwell Plantation, centered two miles to the east. We have located the scattered remains of a hearth of one structure (Str. 5) associated with this occupation. By 1770, Peter's son, Thomas Jefferson, had begun to develop Monticello Plantation. He built a new overseer's house at Site 7 and housed slaves there as well. Site 7 was abandoned about 1800.

Site 8 was initially occupied in the 1770s by slaves and abandoned around 1800. Subfloor pits associated with four structures (Str. 1-4) have been located.

Monticello Mansion
Site 7
Site 8
■ known structure location
☐ suspected structure location
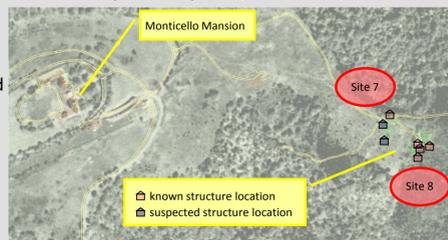
3 Excavation Methods

Stratified random sampling of the plowzone was conducted by excavating a minimum of one 5-by-5 foot quadrat in every 20-foot sampling grid block across the sites. Additional quadrats were excavated where randomly placed quadrats uncovered features and in areas where we expected to find features.

At Site 7, we have excavated 144 quadrats, while 266 quadrats have been excavated at Site 8. All sediment was screened through quarter-inch mesh.

Str. 5
Site 8
Str. 4
Str. 2
Str. 3
Str. 1
Site 7
Limits of excavation
■ = sub-floor pit
☐ = other feature
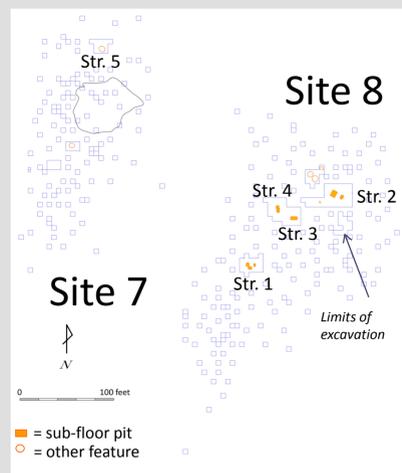
4 Statistical Methods

Spatial variation across quadrats in the frequencies of chronologically sensitive ceramic types is the key to our diachronic approach to site structure. But ceramics samples from each quadrat are small, ensuring that type frequencies are affected by sampling error. To see through this noise, we use empirical-Bayesian methods (Robertson 1999). The idea is to estimate noise-free type frequencies in a given quadrat by "borrowing strength" from neighbors, or combining, according to Bayes' Theorem (Carlin and Lewis 2000; Martuzzi and Elliott 1996), the type frequencies in a given quadrat with those in quadrats that fall within a surrounding spatial neighborhood. *(See handout.)*

With the sampling issue addressed, we turned to the problem of how to identify and interpret spatio-temporal variation in ceramic assemblages across our two sites. Correspondence analysis (CA) provides a solution precisely because it is flexible enough to detect multiple gradients that may have simultaneously operated in the past to condition variation in ceramic-type frequencies (Ramenofsky *et al.* 2009; Smith and Neiman 2007).

## 5 The Occupational Histories of Sites 7 and 8
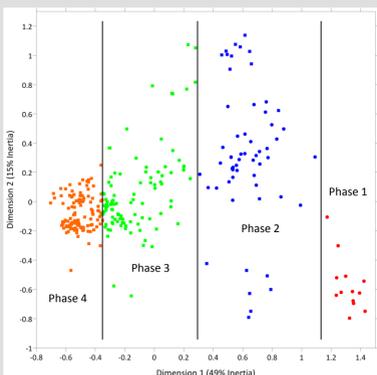
CA results for the combined analysis of Site 7 and Site 8 indicate one clearly significant dimension of variation (Dimension 1) with another two possibly meaningful dimensions, as measured using the statistical significance of the broken stick model.
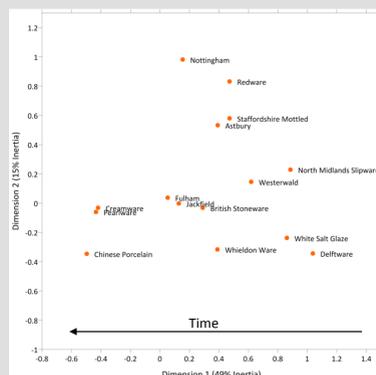
Plotting the ceramic types along Dimensions 1 and 2, we see that Dimension 1 represents a temporal gradient. Delftware, for example, is located on the far right along Dimension 1; whereas, Pearlware is located on the far left.
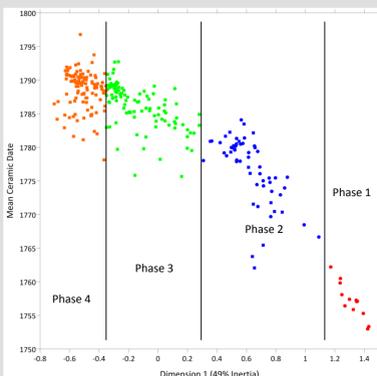

A plot of the assemblage mean ceramic dates (MCDs) against Dimension 1 scores confirms our suspicion (Kendall Tau b -0.635, p <.0001). These results present only part of the picture, however.
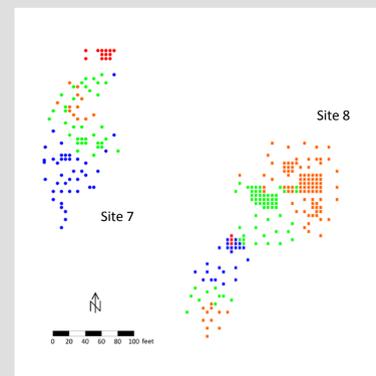
Coding the quadrats by their position along Dimension 1, which we now interpret as a temporal dimension, reveals a striking spatial pattern. We can now see how the locations of artifact discard, and residential areas, changed over time.

6 Exploring Synchronic Variation

Before we can fully embrace the results just described, it is necessary to understand the variation captured by Dimension 2. Site 8 assemblages contribute the lion's share of variation along Dimension 2, so we analyzed the sites separately.
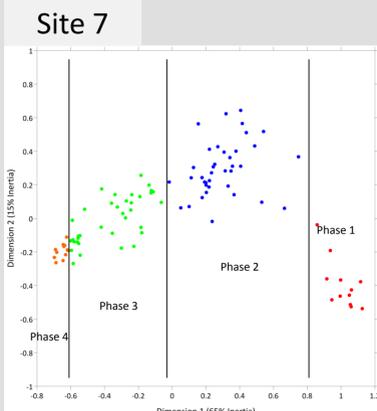

The CA results for Site 7 indicate that Dimension 1 alone carries meaningful variation. Both the ceramic types plot and the plot of MCDs and CA Dimension 1 scores (Kendall Tau b -0.822, p <.0001) support the hypothesis that this dimension is temporal.
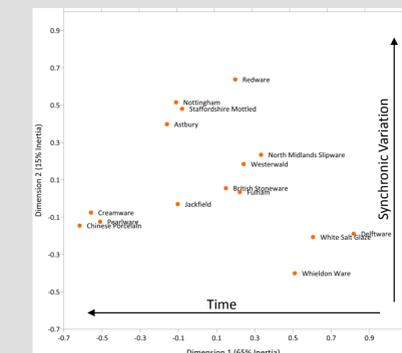
It is possible that Dimension 2 also merits interpretation. Quadrats with high Dimension 2 score fall on the southern end of Site 7 and are dominated by ceramic types that include Redware and Staffordshire Mottled Slipware, which may have been less costly to acquire or served utility functions. Hence Dimension 2 may capture lower levels of resource access or functional variation. We revisit this idea in the final discussion.
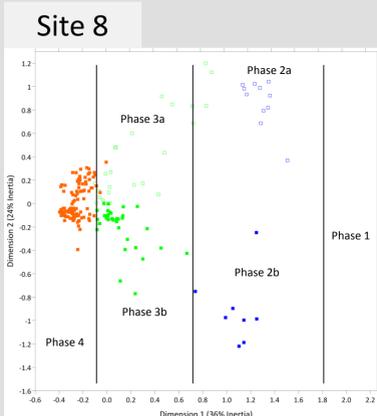
The ceramic assemblages from Site 8 are, in fact, the ones with a strong additional source of variation. When analyzed separately from Site 7, Site 8 has two statistically significant dimensions of variation, based on the broken stick model.
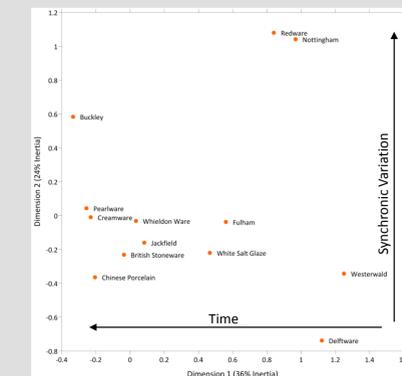
Dimension 2 scores reveal synchronic variation, with a subset of quadrats (Phases 2a and 3a) with having more Redware and Nottingham and less refined wares than other contemporary assemblages (Phases 2b and 3b).

Site 8
Phase 4
Phase 3a
Phase 2a
Phase 2b
Phase 3b
Phase 3a
Phase 4

When we symbolize the Site 8 quadrats to represent not only the chronological groupings defined by positions on Dimension 1 but also the synchronic division in ceramic type proportions along Dimension 2, we see that there is again a spatial characteristic to the patterns.

The quadrats with high Dimension 2 scores have proportionally more Redware than their contemporary neighbors. Does this mean we have identified special activity areas at the site, or could it be that contemporary residential households acquired, used, and discarded slightly different ceramic assemblages?

7 Discussion

One important and unanswered question is what to make of the non-temporal variation observed across Site 8. For the moment we have two competing hypotheses.

1. Different activity areas, one residential and one specialized.
2. Different residential groups, with different patterns of ceramic consumption.

The first hypothesis suggests that the synchronic variation on Site 8 between the quadrats belonging to Phases 2a and 2b was activity-related, with the Phase 2a quadrats dominated by utilitarian wares, *e.g.* Redware, and the 2b quadrats possessing greater quantities of tablewares. This implies that members of a single household were conducting these two kinds of activities in spatially discrete locations. In Phase 3, the residential space moved to the north while the remains of food-processing activities appear further south. By Phase 4, there were two household clusters, one at the southern end of the site and one at the northern end, but activity-related variation within them was minimal.
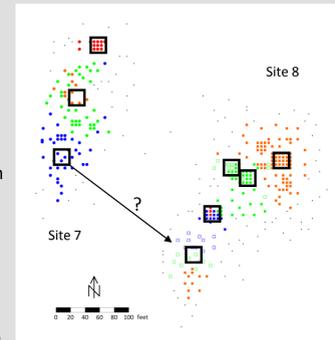
Under the second hypothesis, at the beginning of Phase 2, a new household appeared on the southern end of Site 8, creating the occupation we identify as Phase 2a. This household's assemblage was like the one found on the southern end of Site 7, distinguished by high levels of Redware and Nottingham. These two households may have participated in the same ceramic supply networks, or may have shared members. Shortly thereafter, a second household with a different ceramic inventory was established just to the north, represented by Phase 2b. This may represent a new group of enslaved people arriving with a separately-sourced ceramic assemblage. By the end of the occupation, the two residential clusters at the northern and southern ends of the site shared the same ceramic inventory and supply networks

The evidence here is not yet conclusive. Our further investigations will include other artifact classes and will be based on the time-space phased grouping established here. We can say that statistical methods are key to constructing a complete history of household formation and spatial organization at these sites.

Site 8
Site 7
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References
Ascher, R. (1968) Time's Arrow and the Archaeology of a Contemporary Community. Pp. 43-52 in *Settlement Archaeology* (ed. by K. C. Chang). Palo Alto: National Press Books.
Bailey, G. (2007) Time perspectives, palimpsests and the archaeology of time. *Journal of Anthropological Archaeology* 26(2):198-223.
Binford, L. R. (1964) A consideration of archaeological research design. *American Antiquity* 29: 425-41.
Binford, L. R. (1981) Behavioral Archaeology and the "Pompeii Premise". *Journal of Anthropological Research* 37: 195-208.
Carlin, B. P. and B. A. Louis (2000) *Bayes and Empirical Bayes Methods for Data Analysis*. Chapman and Hall, New York.
Dunnell, R. C. (1992) The Notion Site. Pp. 21-41 in *Space, Time and Archaeological Landscapes* (ed. by J. Rossignol and L. Wandsnider). New York: Plenum Press.
Hutson, S. and T. Stanton (2007) Cultural Logic and Practical Reason: The Structure of Discard in Ancient Maya Houselots. *Cambridge Archaeological Journal* 17(1):123-144.
O'Connell, J. F. (1993) What Can Great Basin Archaeologists Learn from the Study of Site Structure? An Ethnoarchaeological Perspective. *American Antiquity* 58(1):74-108.
Martuzzi, M. and F. Elliott (1996) Empirical Bayes estimation of small area prevalence of non-rare conditions. *Statistics in Medicine* 15, 1867-1873.
Smith, K. and F.D. Neiman (2007) Frequency seriation, correspondence analysis, and Woodland Period ceramic assemblage variation in the Deep South. *Southeastern Archaeology* 26 (1):47-72.
Ramenofsky, A. F., F.G. Neiman and C. D. Feirce (2009) Measuring time, population, and residential mobility from the surface at San Marcos Pueblo, north-central New Mexico. *American Antiquity* 74(4): 505-530.
Robertson, I. G. (1999) Spatial and Multivariate Analysis, Random Sampling Error, and Analytical Noise: Empirical Bayesian Methods at Teotihuacan, Mexico. *American Antiquity* 64: 137-152.
Wandsnider, L. A. (1996) Describing and Comparing Archaeological Spatial Structures. *Journal of Archaeological Method and Theory* 3(4):319-384.